

*Sub 5* What is claimed is:

1. An apparatus comprising:
  - dielectric; and
  - conductive material on the dielectric;

*Sub 5* the conductive material defining a plurality of spaced lines, opposing sidewalls of the spaced lines defining a distance therebetween less than a height of the conductive material.
2. An apparatus according to claim 1, in which the height of the conductive material is at least two times the distance between the lines.
- 10 3. An apparatus according to claim 1, in which the conductive material defines three separate conductive lines over the dielectric, the distance between the lines being less than their height.
- 15 4. An apparatus according to claim 3, in which each line comprises a proximal end and a distal end, the transmission line structure further comprising three separate drivers, each driver to drive the proximal end of a respective one of the three conductive lines.
5. An apparatus according to claim 4, the inputs of the drivers to the three conductive lines to receive the same signal.
- 20 6. An apparatus according to claim 1, further comprising a ground plane in contact with the dielectric on a side thereof opposite the spaced lines.
7. An apparatus according to claim 6, in which the h:s ratio associated with the height of the conductive lines relative to their spacing therebetween is greater than the w:t ratio associated with the width of the center conductive line relative to a thickness of the dielectric.
- 25 8. An apparatus according to claim 7, in which the h:s ratio is at least 1.5 times greater than the w:t ratio.
9. An apparatus according to claim 8, in which the h:s ratio is at least greater than the w:t ratio multiplied by the relative dielectric constant of the dielectric.
- 10 30 10. An apparatus according to claim 1, further comprising second dielectric over and between the lines.

11. A transmission lined structure according to claim 10, in which the second dielectric comprises a dielectric constant the same as that of the dielectric beneath the conductive material.

12. A transmission line structure comprising:

a ground plane;

a dielectric over the ground plane;

a plurality of conductive lines over the dielectric, each conductive line comprising:

opposite primary faces, and

opposite secondary faces defining their height,

10 one of the secondary faces in contact with the dielectric to support the conductive line relative thereto;

primary faces of adjacent conductive lines defining a gap therebetween, the gap distance less than the height of the conductive lines.

13. A transmission line structure according to claim 12, in which the height is at least two times the gap distance.

14. A transmission line structure according to claim 12, in which the dielectric comprises a thickness  $t$ , and one of the conductive lines comprises a width  $W$  between its primary faces; the ratio  $h:s$  for the height  $h$  of the conductive lines relative to the gap distance  $s$  being greater than the ratio  $W:t$  for the width  $W$  of the conductive line relative to the dielectric thickness  $t$ .

20 15. A transmission line structure according to claim 14, in which the  $h:s$  ratio is at least 1/2 times greater than the  $W:t$  ratio.

16. A transmission line structure according to claim 12, further comprising a plurality of amplifiers to drive respective conductive lines of the plurality of conductive lines.

25 17. A transmission line structure according to claim 16, in which the amplifiers of the plurality comprise inputs electrically coupled in common to a signal node.

18. A transmission line structure according to claim 16, in which the plurality comprises three.

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19. A transmission line structure according to claim 18, in which the dielectric comprises a thickness  $t$ , and the center one of the three conductive lines comprises a width  $W$  between its primary faces; the ratio  $h:s$  for the height  $h$  of the conductive lines relative to the gap distance  $s$  being greater than 1.5 times the ratio  $W:t$  for the width  $W$  of the center conductive line relative to the dielectric thickness  $t$ .
20. An integrated circuit comprising:
- a dielectric having a surface;
- a plurality of conductive lines against the dielectric for signal propagation, each conductive line comprising:
- a first edge against the surface of the dielectric;
- opposing sidewalls extending away from the dielectric, and
- a second edge opposite the first edge to define a height;
- the sidewall of one of the conductive lines separated from the sidewall of an adjacent conductive line of the plurality by a distance less than the height.
21. An integrated circuit according to claim 20, in which the height is at least 1.5 times greater than the spacing between the adjacent conductive lines.
22. An integrated circuit according to claim 21, in which the plurality of conductive lines comprises three, the middle conductive line disposed between two outer conductive lines and comprising a width defined by its opposing sidewalls.
23. An integrated circuit according to claim 20, further comprising a conductive layer against the dielectric opposite the plurality of conductive lines.
24. An integrated circuit according to claim 23, in which the conductive lines each comprises a source end to receive a signal; the integrated circuit further comprising a plurality of amplifiers, each amplifier of the plurality to drive the source end of its associated conductive line of the plurality.
25. An integrated circuit according to claim 24, in which the amplifiers comprise inputs coupled in common to a signal node.
26. An integrated circuit according to claim 23, in which each of the conductive lines comprises a source end, the source ends of the plurality of conductive lines to be driven by the same signal.

27. A method of routing a signal across a substrate, comprising:  
driving a plurality of conductive lines that are disposed side-by-side with a signal; and  
receiving the signal from one of the plurality of conductive lines at an end opposite its  
driven end, the one conductive line between adjacent conductive lines within the  
plurality.
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28. A method according to claim 27, further comprising terminating the adjacent  
conductive lines at ends thereof proximate the one conductive line.
29. A method according to claim 27 in which the signal is coupled to three adjacent  
conductive lines.
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30. A method according to claim 29, further comprising driving the plurality of  
parallel conductive lines with a signal defined relative to a ground plane of the  
substrate.
31. A method according to claim 30, further comprising supporting the three adjacent  
conductive lines in spaced relationship with a dielectric over the ground plane.

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32. A computer system having a processor comprising:  
a substrate with an insulating layer; and  
a plurality of conductive lines in contact with the insulating layer,  
a center conductive line disposed between two other conductive lines of the plurality  
to define a gap distance therebetween,  
the gap distance less than a height of the conductive lines.
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33. A computer system according to claim 32, the processor further comprising a  
ground plane in contact with the insulating layer on a side opposite the plurality of  
conductive lines.
34. A computer system according to claim 33, in which the center conductive line  
25 comprises a width  $W$ ,  
the insulating layer comprises a thickness  $t$ ;  
the  $h:s$  ratio for the height  $h$  of the conductive lines relative to the gap distance  $s$  being  
greater than the  $W:t$  ratio for the width  $W$  of the center conductive line relative to  
the thickness  $t$  of the insulating layer.

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35. A computer system according to claim 34, in which the  $h:s$  ratio is 1.5 times greater than the  $W:t$  ratio.
36. A computer system according to claim 32, the processor further comprising a data buffer to source a data signal to the plurality of conductive lines.
- 5 37. A computer system according to claim 36, the processor further comprising a data receiver to receive a data signal from the plurality of conductive lines at a location remote the data buffer.
38. A computer system according to claim 37, in which the data receiver is coupled to receive a data signal from the center conductor of the plurality.
- 10 39. A computer system according to claim 38, the processor further comprising dummy loads coupled to the outer conductive lines.
40. A computer system according to claim 39, in which the dummy loads are coupled to the outer conductive lines at locations thereof proximate the coupling of the data receiver to the center conductive line.
- 15 41. A computer system according to claim 40, the processor further comprising separate drivers for each of the plurality of conductive lines, each driver to receive the data signal from the data buffer and to drive its respective conductive line of the plurality.
42. A computer system according to claim 32, the processor further comprising dielectric over the conductive lines and the insulating layer.
- 20 43. A computer system according to claim 42, in which the dielectric is over and between the conductive lines.
44. A computer system according to claim 43, in which the dielectric comprises a material of dielectric constant substantially the same as the insulating layer.

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